



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,828	09/12/2005	Dan Raz	S1121U	2711
20529	7590	04/10/2009		
THE NATH LAW GROUP 112 South West Street Alexandria, VA 22314			EXAMINER HENDERSON, RYAN N	
			ART UNIT 4137	PAPER NUMBER
			MAIL DATE 04/10/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/520,828

**Applicant(s)**

RAZ ET AL.

**Examiner**

RYAN HENDERSON

**Art Unit**

4137

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-624/CC)  
Paper No(s)/Mail Date 09/26/2005, 10/18/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This action is in response to the preliminary amendment received on September 12, 2005 wherein the applicant revised a typographical error in claim 14.

#### ***Claim Objections***

1. Claim 7 is objected to because of the following informalities: Applicant states "claim1", this should be revised to state --claim 1--. Appropriate correction is required.

1. Claims 8 and 9 are objected to because of the following informalities: Applicant uses the terminology "apparatus according to any one of claims 1", wherein applicant should revise to state --apparatus according to claim 1--. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4-8, 10, 11, 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4,962,751 to Krauter.

**In regard to claims 1 and 10**, Krauter discloses an endoscopic steering apparatus (10), comprising: an endoscope, having distal and proximal ends thereof; at

least one proximal cylinder (40'), disposed in a vicinity of the proximal end of the endoscope; at least one proximal piston (32'), slidably coupled to the at least one proximal cylinder (40'); a first distal cylinder (40), disposed at the distal end of the endoscope; a first distal piston (32), slidably coupled to the first distal cylinder (40); a second distal cylinder (40), disposed at the distal end of the endoscope; a second distal piston (32), slidably coupled to the second distal cylinder (40); a first tube (36), coupled to the first distal cylinder (40) and to the at least one proximal cylinder (40'); a second tube (36), coupled to the second distal cylinder (40) and to the at least one proximal cylinder (40'); and a linkage (16) disposed at the distal end of the endoscope and coupled to the first distal piston (32) and to the second distal piston (32), such that displacement of at least one of the distal pistons (32) causes displacement of the linkage (16) and steering of the distal end of the endoscope. Claim 10, which is similar in scope to claim 1, recites the distal end comprising a forward section (18) and a rear section (24) flexibly coupled (Col. 3, Lines 44-46, Fig. 1, #20) to the forward section (18) and that the displacement of the proximal piston (32') generates a pressure in the tube capable of displacing the distal piston (32) and rotating the forward section (18) with respect to the rear section (24). In figure 1, Krauter uses proximal (12) and distal (14) muscle pumps in order to articulate the linkage (16) of the endoscope. Control knobs (44 and 46) are rotated to move racks (48 and 50) that are connected to steering cables (26' and 28'). When the rack (48) is actuated, it pulls the cable (26') which elongates, or deflates the bladder (32') of the proximal muscle pump and conversely, causes the bladder (32) of the distal pump to expand. The dictionary.com definition of a piston

states that a piston is "a disk or cylindrical part tightly fitting and moving within a cylinder". The bladder (32 and 32') represents the piston in this case, wherein when the bladder expands it becomes slidably coupled to the cylinder (40 and 40'). This produces a tensile force on the cable (26) that pulls the linkage (16) and in turn produces articulation of the linkage. Figure 1 also contains a control (18) representing the forward section, a head (24) representing the rear section, and a flexible insertion tube (20) representing the forward and rear section being flexibly coupled together.

**In regard to claims 2 and 11**, Krauter' device contains a proximal piston (32) which is adapted to manually drive (Column 4, Lines 52-63, Fig. 1, #44).

**In regard to claim 4**, Krauter discloses an apparatus according to claim 1, wherein the at least one proximal cylinder (40) comprises respective first and second proximal cylinders (40), wherein the at least one proximal piston (32) comprises respective first and second proximal pistons (32), slidably coupled to the first and second proximal cylinders (40), respectively, wherein the first tube (36) is coupled to the first distal cylinder (40') and to the first proximal cylinder (40), and wherein the second tube (36) is coupled to the second distal cylinder (40') and to the second proximal cylinder (40). Krauter discloses 4 proximal muscle pumps slidably coupled to 4 proximal cylinders and 4 distal muscle pumps slidably coupled to 4 distal cylinders with each of these proximal and distal cylinders coupled together by tubes (36). In Krauter's device, the muscle pumps act as pistons driving the steering of the mechanism.

**In regard to claim 5**, Krauter discloses an apparatus according to claim 1, wherein the at least one proximal cylinder (40') comprises a single proximal cylinder (40'), wherein the at least one proximal piston (32') comprises a single proximal piston (32'), slidably coupled to the single proximal cylinder (40'), wherein the single proximal cylinder (40') has a proximal port (26') and a distal port (36), disposed at respective ends of the single proximal cylinder (40'), and wherein the first and second tubes (36) are coupled to the single proximal piston (32') at the proximal and distal ports, respectively.

**In regard to claims 6-8**, Krauter discloses an apparatus according to claim 1, wherein the linkage (Col. 4, Lines 44-51, Fig. 1, #16) comprises an element, disposed in the endoscope such that compression and tension in the element translates a displacement of one of the distal pistons into a change in angular disposition of the distal end of the endoscope and configured so as to translate a displacement of one of the distal pistons into a displacement of the other one of the distal pistons. The invention that Krauter discloses has two pairs of proximal muscle pumps and two pairs of distal muscle pumps. In the first pair, there are 2 proximal pumps and 2 distal pumps. The control knob (44) is operate so that when the bladder (32') of the first proximal muscle pump expands, it shortens in length, which causes the bladder (32) of the first distal muscle pump to deflate, or elongate. While this occurs, the bladder (32') of the second proximal muscle pump is elongated and the bladder (32) of the distal muscle pump is expanded. The control knob (44) can be operated to provide the reverse relationship as well. This causes a change in angular disposition with regard to

the distal end of the endoscope and causes both muscle pumps to have equal displacements.

**In regard to claims 9 and 13**, Krauter discloses an apparatus according to claim 10, and comprising a mechanical user-interface device (44), which is coupled to the proximal cylinder (40') so as to mechanically transduce a force generated by a user of the steering apparatus into a motion of the proximal piston (32'). Krauter accomplishes this by turning the control knob (44) that actuates the rack (48) the cable (26') to expand or deflate the bladder (32') inside the proximal muscle pump.

**In regard to claims 14 and 16**, Krauter discloses an apparatus according to [any one of claims] claim 10, wherein the distal cylinder (40) has a distal port, distal to the distal piston (32), in communication with the tube (36), such that positive pressure in the tube responsive to displacement of the proximal piston induces proximal motion of the distal piston. The distal port that Krauter discloses is the opening on the distal end of the distal cylinder (40) to where the cable (26) passes through the cylinder and into the bladder (32). The tube (36) is connected to the distal cylinders, and therefore it's irrelevant which port on the cylinder the applicant states as the tube (36) being in communication with, since both ports would be in communication with the tube (36). In claim 16 the applicant added another proximal cylinder and piston at the proximal end of the endoscope totaling 2 pistons at that end, but Krauter discloses 4 muscle pumps at the proximal end of his endoscope.

**In regard to claim 15**, Krauter discloses an apparatus according to claim 14, wherein the proximal cylinder (40') has a first port, which is in communication with a first

face of the proximal piston (32'), and a second port, which is in communication with a second face of the proximal piston (32'), wherein the tube (36) is coupled to the proximal cylinder (40') at the first port, so as to be in communication with the first face of the proximal piston (32'), wherein the distal cylinder (40) has a proximal port, proximal to the distal piston (32), wherein the apparatus comprises an additional tube (36) having distal and proximal ends thereof, the additional tube (36) being in communication at the distal end thereof with the proximal port of the distal cylinder, and being in communication at the proximal end thereof with the second port of the proximal cylinder, such that positive pressure in the additional tube responsive to displacement of the proximal piston induces distal motion of the distal piston. For this argument, the first port on the first face of the proximal cylinder (40') is where the tube (36) passes through the distal end of the proximal cylinder (40'). The second port on the second face of the proximal cylinder (40') is where the cable (26') passes through the proximal end of the proximal cylinder (40'). The tube (36) is connected to the proximal and distal cylinders, and therefore it's irrelevant which ports of the cylinders the applicant states as the tube (36) being in communication with, since both ports would be in communication with the tube (36).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



4. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 4,962,751 to Krauter as applied to claims 1 and 10 above, and further in view of US Patent No. 4,721,099 to Chikama.

**In regard to claims 3 and 12**, Krauter discloses an apparatus according to claim 1 and 10, wherein the at least one proximal piston is adapted to be power driven. Raz does not disclose that the proximal piston is adapted to be power driven.

Chikama discloses an operating mechanism for the bendable section of an endoscope. In this endoscope, there's a piston (22) slidably coupled to the cylinder (21) that has a pressure supply port (28) that receives compressed air from a compressed air source (38). It's indicated that the compressed air source is operated from an electric power supply and satisfies the claim of the piston being power driven. (Col. 7, Lines 13-20). It would have been obvious at the time of the invention for one of ordinary skill in the art to operate a piston using a power driven mechanism in order to automate the process and help exert a more precise and accurate pressure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN HENDERSON whose telephone number is (571)270-1430. The examiner can normally be reached on M-F 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda Dvorak can be reached on 5712724764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RH

/Sam Chuan C. Yao/  
Supervisory Patent Examiner, Art Unit 4111